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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,193	09/04/2001	Hideaki Yamanaka	110538	1200

25944 7590 04/23/2003

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 04/23/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,193

Applicant(s)

YAMANAKA ET AL.

Examiner

Holly C. Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 14-23,25,27 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13,24,26,28,29 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 2/10/03 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1-13, 24, 26, 28-29, and 31 in Paper No. 11 is acknowledged. The traversal is on the ground(s) that the different species claimed are similar enough that their searches would necessarily encompass one another. Thus, Applicant argues, there would be no undue burden on the Examiner to search all of the claims.

This is not found persuasive because the Examiner respectfully disagrees that a search for one group would encompass a search for the other group. Each species requires a search in areas not required by the other. Thus, examining all of the claims would present an undue burden.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-9, 24, 26, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al. (US 6280813).

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Carey et al. disclose a magnetic recording medium having at least two magnetic layers antiferromagnetically coupled across a Ru spacer layer and Co interface layers (see figures 1, 3, and 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 6280813).

Carey et al. disclose all of the limitations of the claims, as set forth above, except for a structure having a lower magnetic layer formed from a composite structure including two magnetic layers separated by a non-magnetic spacer and at least one auxiliary enhancing layer. The reference also fails to disclose a structure having three ferromagnetic layers separated by spacers wherein the ferromagnetic atom concentration of the middle layer (ferromag. atom-rich layer) is greater than that of the ferromagnetic atom concentration in the recording layer.

Carey et al. disclose the following structure in figure 3: CoPtCrB (1)/Co(2)/Ru(3)/Co(4)/CoPtCrB(5). The reference teaches that an additional spacer layer and magnetic layer can be added to the structure (see claims 12-13). It would have been obvious to one of ordinary skill in the art at the time of invention to add a Co interface layer in between the

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added spacer layer and at least one of the adjacent ferromagnetic layers in order to enhance exchange coupling between the adjacent ferromagnetic layers.

The above noted structure taught by Carey et al., CoPtCrB (1) / Co (2) / Ru (3) / Co (4) / CoPtCrB (5), corresponds to claims 12-13 as follows: magnetization stabilization layer=(1), 2nd non-magnetic layer= (3), ferromagnetic atom-rich layer= (4) and as noted above the reference teaches that an additional spacer layer and third ferromagnetic layer can be added. These layers correspond to the claimed non-magnetic and recording layers.

6. Claims 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 6280813) in view of Matsuda et al. (US 6197367).

Carey et al. disclose a magnetic recording medium having the claimed structure for use in a hard disk drive apparatus (col. 1, lines 10-20). The reference is silent with respect to the structural components of the disk drive aside from the recording medium.

Matsuda et al. teach that a conventional hard disk drive includes a magnetic recording medium, a magnetic head and driving means (col. 3, lines 26-26).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a magnetic head and driving means in conjunction with the recording medium taught by Carey et al. in order to provide a functional disk drive assembly.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Do et al. (US 6372330) is cited as art of interest.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly C. Rickman whose telephone number is (703) 305-2642. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Holly C. Rickman
Primary Examiner
Art Unit 1773

hcr
April 18, 2003